In The Claims

1 – 15 (Cancelled)

16. (New) A single photon read-out circuit comprising:

a feed-back enhanced reset amplifier, the amplifier comprising a detector reset transistor;

a photodetector connected to an output of the reset amplifier; and

a high-gain amplifier connected to the photodetector, the high-gain amplifier comprising:

a current source transistor connected to the photodetector;

an adaptive skimming circuit having an integration capacitor; and

a pixel reset transistor connected to the current source transistor and the adaptive skimming circuit.

17. (New) The circuit of Claim 16, further comprising a source follower transistor connected to the current source transistor.

18. (New) The circuit of Claim 17, wherein the reset amplifier further comprises a CMOS inverter.

19. (New) The circuit of Claim 18, further comprising a sample-and-hold transistor and a sample-and-hold capacitor connected between the current source transistor and the source follower transistor.

20. (New) The circuit of Claim 16, wherein the reset amplifier further comprises an autozero transistor, a first capacitor, and a second capacitor.

21. (New) The circuit of Claim 19, wherein the high-gain amplifier further comprises a current source shared by all pixels on a bus.

22. (New) The circuit of Claim 21, wherein the reset amplifier further comprises a current source shared by all pixels on a bus.

23. (New) A focal plane array (FPA) having a plurality of pixel cells, each pixel cell comprising:

a feed-back enhanced reset amplifier, the feed-back amplifier comprising:

a CMOS inverter; and

a photodetector reset transistor connected to the CMOS inverter;

a photodetector connected to an output of the reset amplifier; and

a high-gain amplifier connected to the photodetector, the high-gain amplifier comprising:

a current source transistor connected to the input transistor;

a pixel reset transistor connected to the current source transistor; and

an adaptive skimming circuit having an integration capacitor;

wherein the reset amplifier reduces kTC noise, and the high-gain amplifier nulls current associated with the photodetector to reduce signal non-uniformity.

24. (New) A single photon read-out circuit comprising:

a detector;

a detector reset transistor having a drain connected to the detector;

an inverter amplifier connected between the drain of the reset transistor and a source of the reset transistor;

a current source transistor having a gate connected to the detector;

a pixel reset transistor having a drain connected to the current source transistor; and

an adaptive skimming circuit connected to the current source transistor and the pixel reset transistor, the adaptive skimming circuit comprising an integration capacitor.

25. (New) The circuit of Claim 24, further comprising a sample-and-hold transistor and a sample-and-hold capacitor connected to the current source transistor and the adaptive skimming circuit.

26. (New) The circuit of Claim 25, further comprising a source follower transistor having a source connected to sample-and-hold transistor.

27. (New) The circuit of Claim 24, further comprising a first capacitor connected between the drain of the reset transistor and the photodetector, and a second capacitor connected between the source of the reset transistor and photodetector.

28. (New) The circuit of Claim 24, further comprising a current source, shared by all pixels on a bus, connected to the reset transistor and the inverter amplifier.